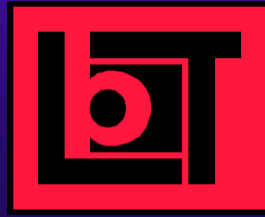




FTA - SGR Round Table

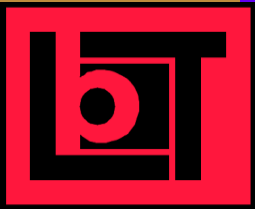
Whole Life Asset Management
July 17, 2012



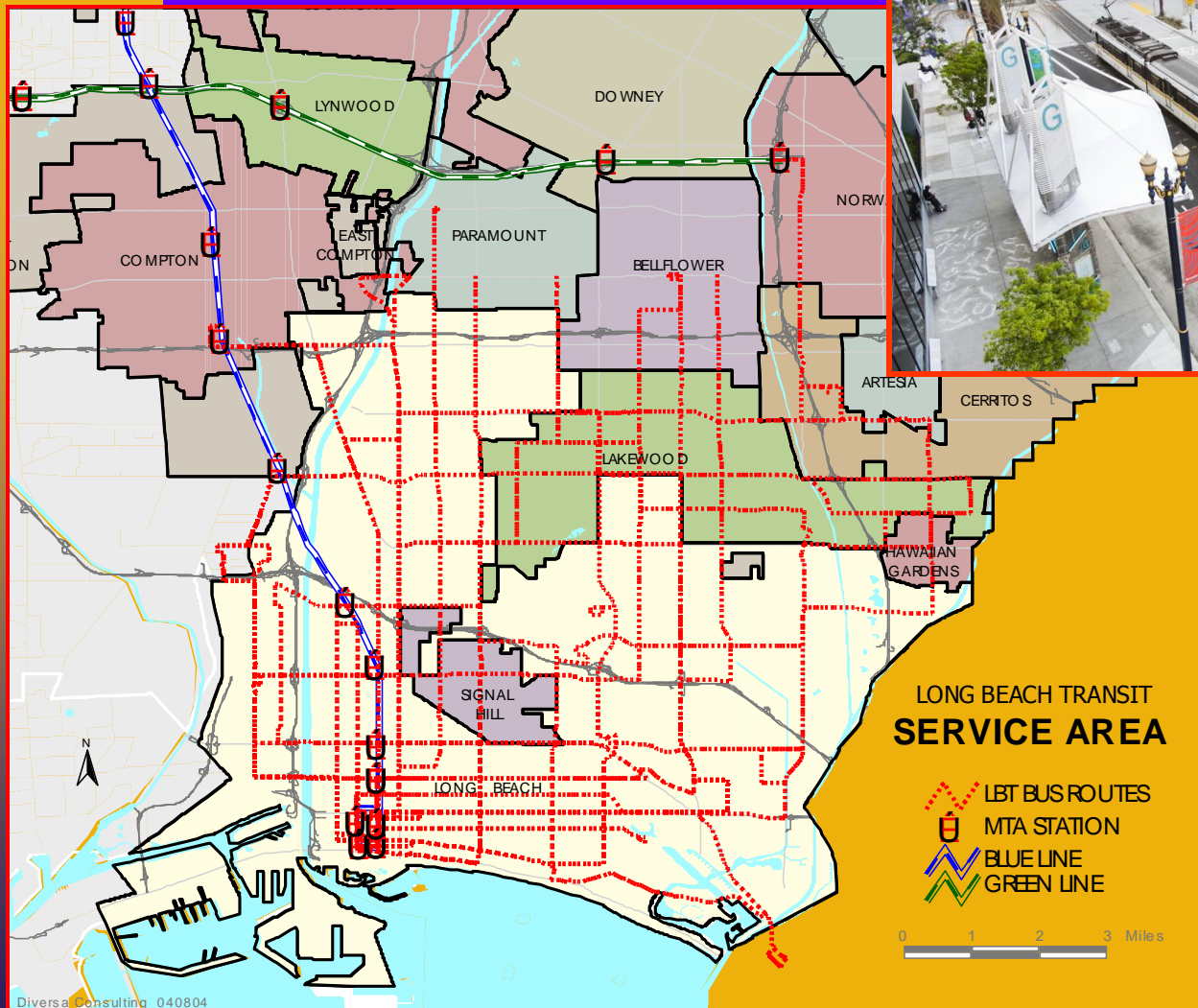


Service for Greater Long Beach

- ◆ We serve Long Beach, along with 11 other cities – 98 square miles with over 1,000,000 people in our service area
- ◆ Over 89,000 passengers a day – amounting to over 29 million passengers a year
- ◆ We provide the following services:
 - 32 Fixed route service
 - Free Shuttle service (the Passport)
 - Demand responsive paratransit (Dial-a-lift)
 - Water Taxi service (AquaBus & AquaLink)
 - Community special services (Museum express)



LBT Service Area





Fleet Makeup

◆ Revenue Fleet

- 204 – 40' New Flyer buses (89 electric hybrid)
- 13 – 60' New Flyer articulated buses
- 30 opus – 30' Passports (*retiring*)
- 64 CNG – 40' Gillig BRT (*being delivered*)
- 10 Electric buses in 2013

◆ Other Services

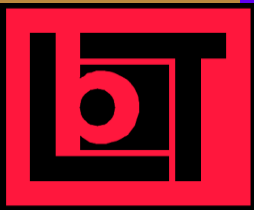
- 17 Dial-A-Lift vans (Paratransit)
- 4 boats (2 AquaBus & 2 AquaLink)
- 1 Charter (Prevost)

◆ Support Vehicles

- 31 service veh for supervisor, staff & operators
- 25 maintenance service vehicles

◆ TOTAL of 325 VEHICLES

◆ 4 Propulsion Systems (Diesel, Gasoline Hybrid, CNG & All- Electric)



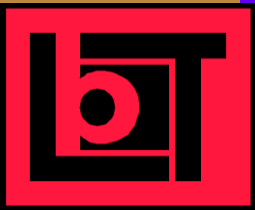
LBT Fleet – more than buses





Facilities

- ◆ Two major operation facilities
 - Anaheim - 8 acres & 4 buildings
 - LJ - 10 acres & 3 buildings
 - New CNG Station at LJ in 2012
 - *New Electric Fast Charge in 2013*
- ◆ Downtown Transit Gallery
 - 3 blocks with rail & 8 multi-agency stops
 - Transit & Visitor Information Center
 - Public Restrooms & Public Art Gallery
- ◆ 2,000 Bus stops
 - Real time information at over 200 stops
 - Artwork / Sustainable stops with solar panels



Facilities – More Than Buildings





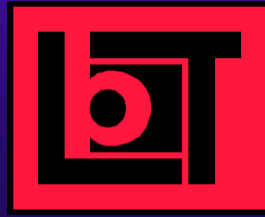
Managing Assets

- ◆ Asset Management Philosophy
 - Fleet, Facilities, Right of Way, Support Systems (Power, Safety, IT, Furniture etc..)
 - LBT prioritizes in that order
 - LBT maintains assets in a “like new” condition
- ◆ Traditionally – all efforts on Fleet
 - Cradle to Grave Philosophy
 - Planning, Purchase, Maintain, Rehab, Retire
 - Coach broken down & analyzed by 28 components
 - Costing by components, coach, groups, Fleet
 - Monthly Performance Indicators
- ◆ Why is Facilities not treated the same?



Long Beach Transit

Comprehensive Facility Management Plan





PAS55 Elements

- ◆ Know your Asset – Equipment Register
 - Inventory (asset info, hierarchy, install date, useful life, replacement value)
 - Criticality / Condition Assessment recorded
 - Engineering drawings, vendor data & asset related documents readily available
- ◆ Maintenance Scheduling / Performance
 - Preventative & Responsive Maintenance
 - Work Instructions on standard jobs
 - Non-Compliance strategy
- ◆ Capital Replacement Strategy
- ◆ Reporting & Analysis to Key Indicators



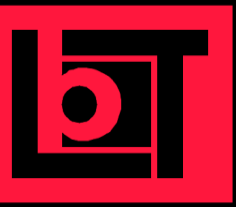
CFMP Project Requirements

- ◆ Inventory of all Assets
- ◆ Asset Criticality/Condition Assessment
 - Reorganize hierarchy/naming convention
 - Criticality defined
 - Deficiency report
- ◆ Annual Maintenance plan – 52 weeks
 - Compare to manpower/contract labor
 - Bring CAD drawings online – linking equip
 - Manuals and inventory online
- ◆ Capital Plan Forecasting
- ◆ Energy study to fold into sustainability

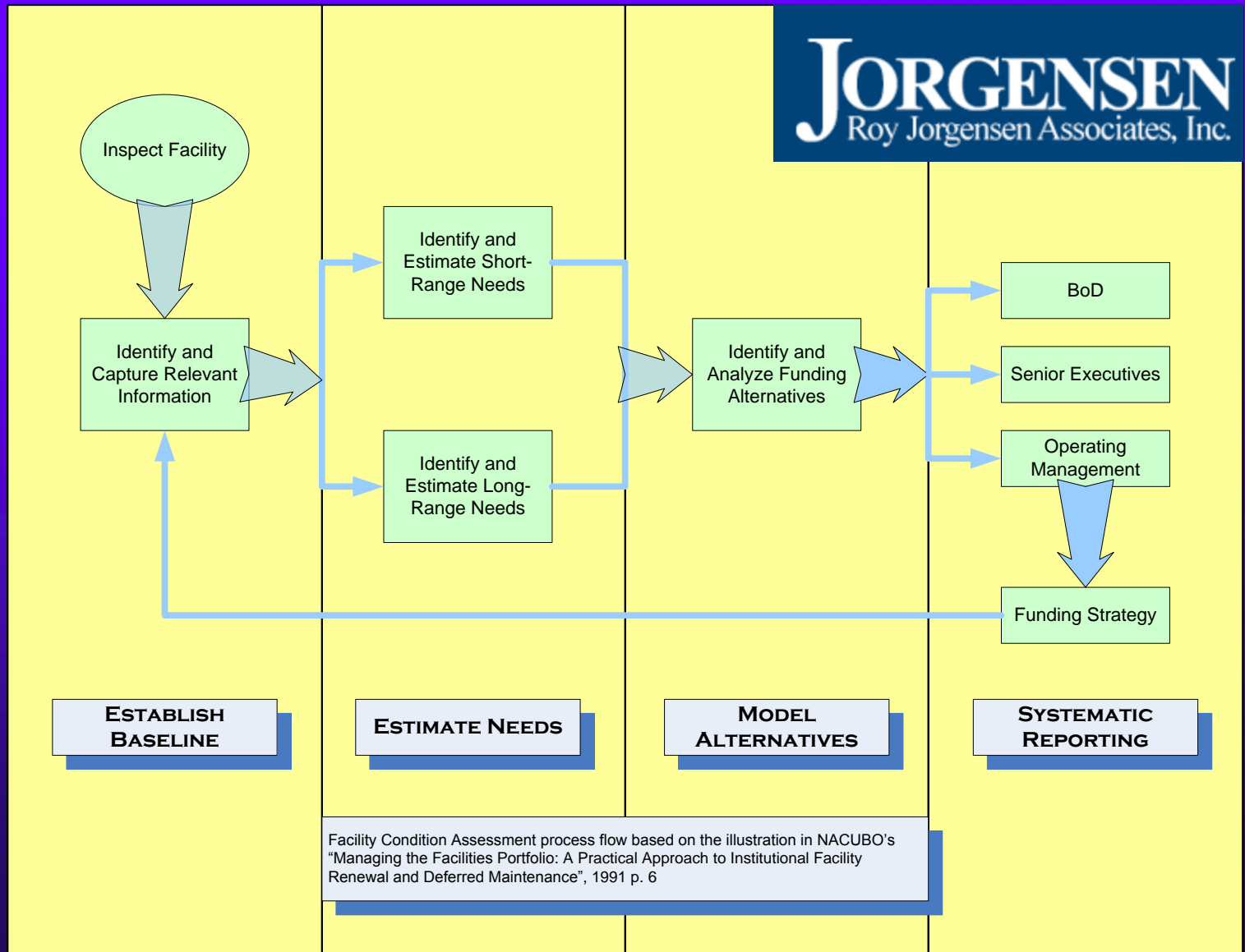


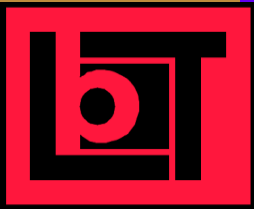
Asset Management Project

- ◆ Upgrading to Ellipse 8 - PAS55 compliant
- ◆ Comprehensive Facility Master Plan (CFMP)
 - Hired Jorgensen Associates to validate facility assets, maintenance & capital plan
 - In the midst of a baseline condition assessment and establish KPI's
- ◆ Right of Way / Stops & Zones
 - Vigil Solutions created an app to validate inventory & do a condition assessment
 - Criticality & Priority based on ridership / politics
 - Will create an ADA, landscape & Art plan
- ◆ Coordinating efforts this summer & prepare for go-live in Nov 2012



Facility Assessment





Bus Stop Assessment

VigilAssessment

Save and ReviewCommentsMark Time Point

Major Amenities	Halogen	2	speed GPS 0 kph
Shelter		1	inertial
Kiosk		0	
Lighting			
Benches			
Transmart			
LBT Transit Stop S Post			
Minor Amenities			

Lighting: Halogen2 Marked Items

Broken / Repairs Needed

Bad

Acceptable

Good

Very Good

The light is in acceptable condition. Some instructions will be provided by the form to help the assessor identify the right score for the right condition. This will be similar to significance and advice section of the normal assessments.

Cancel

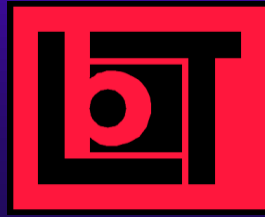
Add Item





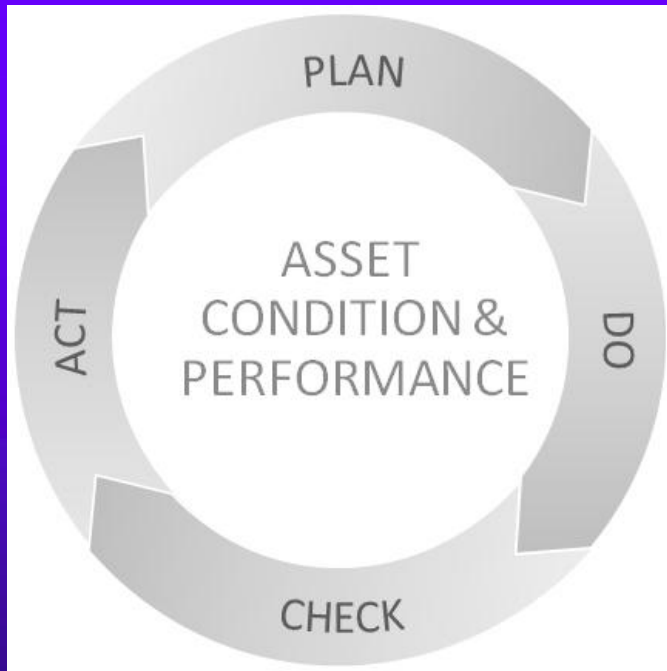
Long Beach Transit

Whole Life Asset Management – Capturing Costs





Whole Asset Life Management



- ◆ Plan - evaluate assets to:
 - build or obtain,
 - how best to maintain & use,
 - and how best to renew, recondition and/or dispose of
- ◆ Asset Understanding
 - Asset Information
 - Asset Risk / Criticality
 - Performance & Condition requirements
 - Key intervention strategies
 - Technology & development strategies



Asset Information



Asset Class
(hierarchy, groups,
sub-component)



Condition
(criticality,
condition)

Equipment Attributes
(equip no, location,
status, owner,)

Name-Plate
(make, model,
statistics, serial #s
etc...)



Cost & Age
(purchase price,
replacement Value, date of
install, estimated useful
life, warranty)



Ellipse Asset Screen

MSE600 - Update Equipment Register *

Submit Refresh New Save As Delete Open... New Search Actions

Equipment Number 000000000055

Equipment Description Ford E450 Regional Transit Bus

Equipment Description 2

Associated Equipment Item

General Costing Tracing Condition Classifications Location Extended Desc Nameplate Alternate References Associated Equipment Equipment Colloquial

Asset Type VH Vehicle

Plant Number 776-221

Status AV Available

Productive Unit

Custodian

Operator Id

Shutdown Equip

Warranty Stat. Type MI MILES

Warranty Date 01/06/2011

Name Code

Active Flag

Asset Mode MB Motor Bus

Equipment Group Id E450 Ford E450

Equipment Location EST East

Input By

Customer No

Warranty Stat. Value 20000.00

District Code R100 R100 - AUD/USD

Powered by MINCOM

- ◆ Assets are registered in the Equipment Register
- ◆ Entries include the classification of Asset Type and Asset Mode
- ◆ Dollar Value entered (original and projected based on CPI)



Asset Criticality- objectives

- ◆ Asset Criticality – if this asset fails how will it impact my organization
 - Likelihood of failure – how soon will it fail
 - Impact of failure – severity
- ◆ Help determine the level of detail of maintenance strategies / plans for groups of assets
 - Prioritizes work activity
 - Prioritizes scheduled assessments
 - Prioritizes operating & capital monies

Asset Criticality

Likelihood of Failure

Score	Time
5	Within 6 months
4	Within 1 year
3	Within 5 years
2	Within 10 years
1	Greater than 10 yrs

X

Severity of Failure

Severity	Operation	Environment	People	Financial
5	> 1 week	Penalty	Fatality	<\$500k
4	1 week	Reportable	Medical	<\$100k
3	1 day	Internal	Injury	< \$50k
2	1 shift	Goals	Inconvenience	< \$10k
1	No harm	No harm	No harm	No harm

=

	1	2	3	4	5
1	1	2	3	4	5
2	2	4	6	8	10
3	3	6	9	12	15
4	4	8	12	16	20
5	5	10	15	20	25



Asset Criticality

- ◆ High Risk – 15 – 25
 - Must have PM's
 - Must have Funds
- ◆ Med Risk – 5 - 14
 - General inspections
 - Funds projected in long-term capital
- ◆ Low Risk – 1 – 5
 - Repair on failure basis
 - Funds are general

Perform Risk Assessment >> Perform Risk Assessment

Perform Risk Assessment

Risk Category	Risk
Safety	04 - Incident Occurs - Likely
Environment:	05 - Contained Minor Incident - Certain
Operational Impact	04 - Insignificant Operational - Likely
Reliability Availability	03 - < 8 Hrs Critical Plant - Possible
Cost	03 - < \$100,000 Loss or Damage
Reputation	03 - Internal Complaints - Possible
Risk Category 7 Description	
Risk Category 8 Description	
Risk Category 9 Description	
Risk Category 10 Description	

Reallocate Priority

Priority Value 41.00

Recorded within Ellipse
Up to 10 Risk Codes



Asset Operation & Maintenance

- ◆ Operating costs – stats entered (fluids, miles, hours, etc...)
- ◆ Workorders Maintain Costs
 - Preventative (based on operating statistic)
 - Planned (Rehabs, time scheduled activities, warranty, campaigns etc..)
 - Reactive Maintenance
- ◆ Workplanner prioritizes & schedules
 - Can view work by criticality & condition
 - Can see labor & material availability
 - Can defer & combine jobs



Asset Condition - objectives

- ◆ Periodic ‘snapshot’ of asset condition
 - ◆ Maintenance leads to condition
 - ◆ Visible defects, component deterioration etc...
- ◆ Asset Condition – age of asset relative to its design life & risk to organization
 - Residual life – time to next “intervention” grouped A – D (10yrs+, 5-10, 1-5, & <1)
 - Residual Risk (functional concerns) / criticality code
- ◆ Measured against operating & maint. benchmarks - create rehab/replace plan
- ◆ Will be regularly scheduled for assessment

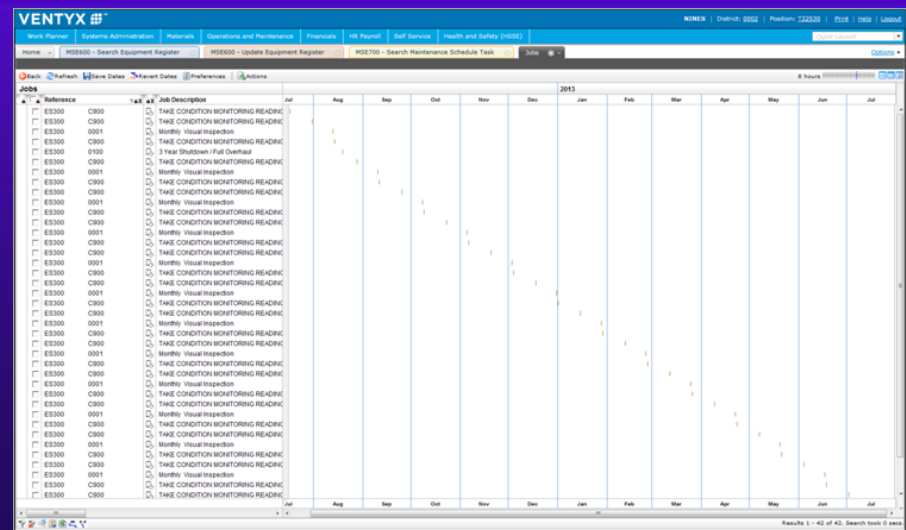
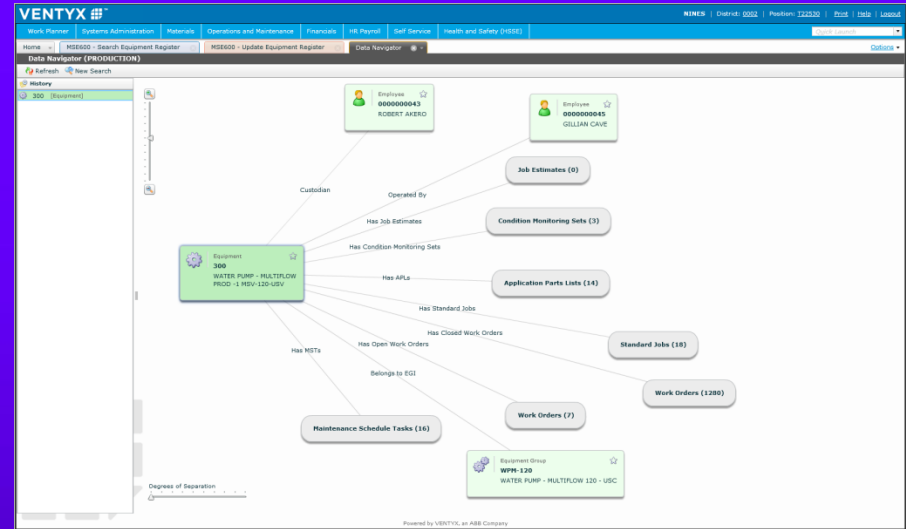


Condition vs. Performance

- ◆ Performance is a totally separate issue that can not be confused with condition
- ◆ Asset Performance
 - (e.g., Service Reliability, Availability, Customer Comforts, Safety, Meets Current Industry Standards)
 - “We will keep our assets safe & reliable”
- ◆ “Assets are fit for purpose”

Reviewing your Asset

- ◆ Navigator – allows you to see:
 - Attributes
 - Manuals
 - Open Jobs
 - Costs
- ◆ Can move to any action:
 - Scheduled work
 - Major Rehab





Performance Measures

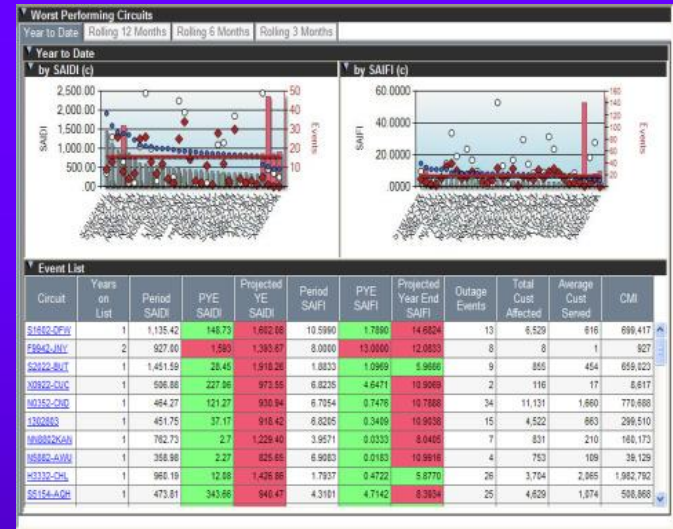
- ◆ Financial and non-financial measure used to help measure progress towards a stated organizational goal or objective.
- ◆ KPI's should
 - Have a clear purpose – an end in mind
 - Systematic and part of normal collection process
 - Separate strategical & tactical objectives
 - Need to be team goals / must own
 - Easy to collect, review & understand
- ◆ The most effective KPI's are dashboards – if you measure it – it will get done.



Key Performance Indicators

Optimize Equipment Life

- ◆ Equipment Condition Index
- ◆ Facility Condition Index
- ◆ Equipment Availability
- ◆ Equipment Efficiency
- ◆ Equipment Condition Assessment
- ◆ Equipment Replacement



Optimize Maintenance Performance

- ◆ Maint Efficiency (cost per stat)
- ◆ Backlog of Maintenance
- ◆ Planned work > 70%
- ◆ WO's completed > WO's schedule
- ◆ Workorder aging
- ◆ Customer Satisfaction

Optimize Energy / Resources

- MPG – within 5% of standard
- Electricity - reduce 2% kwh
- Natural Gas – reduce 3%
- Water – reduce 4%
- Recycling – increase 10%
- 100% energy eval at replacement



Software Pulls it Together

- ◆ Ellipse 8 upgrade underway
 - Comprehensive equipment register
 - Workorder & material management system
 - Workplanner (scheduling PM's & Capital)
- ◆ Document management
 - Facility requires CAD drawings,
 - Manuals connected to equipment
 - Link-one - automated inventory at your fingertips
- ◆ Reporting – measurement & planning
 - KPI's at your fingertips
 - Strategic Planning
 - Capital replacement



Expanded Asset Mgmt Goals

- ◆ Maintain our assets in a “Like New Condition”
- ◆ Prioritize asset maintenance for Whole life on criticality & condition
- ◆ Contain the costs of planning, building, operating, and maintaining our operations
- ◆ Develop and implement a strategical capital improvement plan